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ABSTRACT

A study examined the search for university technology faculty members during 1986-87. The 71 position announcements in departments listed in the Industrial Teacher Education Directory and/or the Chronicle of Higher Education were analyzed. The heads of those departments were surveyed to find out the status of the search and the characteristics of those hired. The response rate for the survey was 95.8 percent. The following were among the study's findings: (1) only 66.2 percent of the responding departments had filled their vacancy; (2) the number of applications received for each position ranged from 2 to 40, with one exception being a department that received 120 applications; (3) about two-fifths of the respondents reported receiving four or fewer applications per position from thoroughly qualified candidates; (4) 55.7 percent interviewed two or three candidates, 18 percent interviewed only one, and 16 percent interviewed four or five candidates; (5) the majority of successful candidates had doctorates; (6) 23 were hired at the rank of assistant professor, eight at associate professor, five at professor, seven at lecturer, and one with no rank; (7) the previous position most often held was employment at other universities; and (8) the candidates' technical expertise, doctorate, teaching experience, scholarly work, and recommendations were considered (in that order of importance) in the hiring decisions. (A list of six references is included in the document.) (CML)

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U.S. DEPARTMENT OF EDUCATION
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Research in Technology Education Series — Report #2

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Supply and Demand for University Technology Faculty: 1986-87 Position Vacancy and Search Results Analysis

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Introduction

Some experts have been predicting a national shortage of qualified persons to fill university faculty positions (Bowen & Schuster, 1985; Watkins, 1986). In addition, studies specific to supply and demand for university faculty for departments listed in the *Industrial Teacher Education Directory* (Dennis, 1986-87) have been conducted over the past four years (Erekson & Birks, 1986; Erekson & Gloeckner, 1986; Erekson & Gloeckner, 1987). These studies have predicted a shortage of qualified individuals to fill technology faculty[1] positions in the near future.

Predicting supply and demand for university technology faculty is a very complex task. In addition to a diverse population, the degree programs offered by the departments listed in the *Directory* vary from bachelors degree only, to bachelors and masters, to bachelors through doctorate, and other combinations of offerings. Supply and demand predictions are also complicated by the myriad of moderating variables that exist in higher education today (e.g., limited university budget resources, student enrollment fluctuations, technical expertise match, private sector competition).

Projections of supply/demand for university technology faculty are at best calculated guesses. To add a new dimension, and more precision, to the supply/demand question, a study of university faculty searches for 1986-87 was conducted. The major research questions for this study were:

- What were the areas of expertise being sought?
- What were the desired qualifications?
- Were the searches successful?
- What were the characteristics of the successful candidates?
- What factors were important to department heads when hiring new faculty members?
- What were the perceptions of department heads as to how difficult it has been to employ university faculty?

Two data collection and analysis activities were conducted in an attempt to answer the major research questions. These two activities were (1) an analysis of position announcements and (2) a status study of the results for the faculty searches.

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[1] Because faculty listed in the *Industrial Teacher Education Directory* are a very diverse group, including those involved in industrial education, industrial technology, engineering technology, technical teacher education, technology teacher education, trade and industrial teacher education, and so forth, the term Technology Faculty will be used throughout this report in reference to *all* faculty listed in the *Industrial Teacher Education Directory*.

Section 1.0 — Vacancy Analysis

Seventy-one faculty position announcements were identified for searches being conducted by the departments listed in the *Industrial Teacher Education Directory* during the 1986-87 academic year. These faculty position announcements were obtained through direct mail and/or located in *The Chronicle of Higher Education*. Each position announcement was analyzed to determine:

- rank being offered
- degree required
- industrial and/or teaching experience required
- technical specialty of the position

Rank

The academic rank advertised for the seventy-one positions is presented in Chart 1.1. Very few positions were advertised specifically for senior faculty members — only two searches for full professors and one search for a full/associate professor. However, 25 searches (35.2%) listed rank as "commensurate" with qualifications (open rank) which left open the possibility of hiring a senior faculty member.

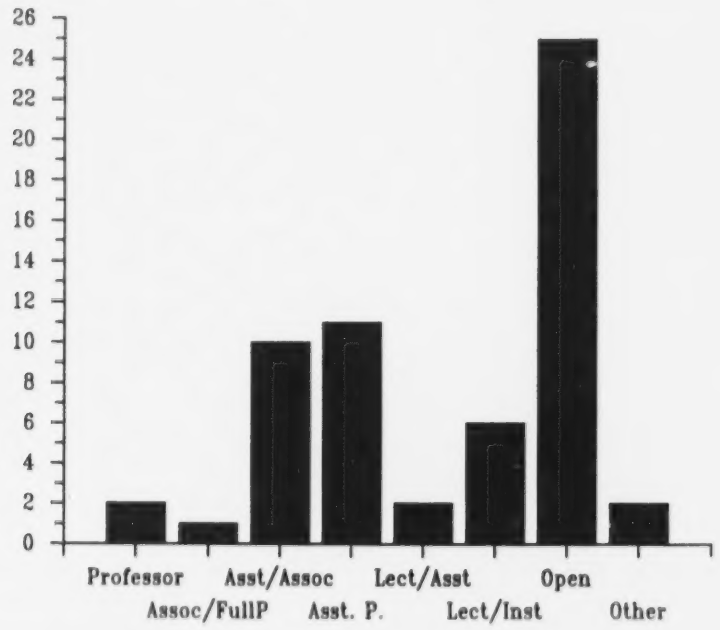

Chart 1.1: Rank Advertised

Industrial/Teaching Experience

Most position announcements (N=55, 77.5%) listed a preference for the successful candidate to have teaching and/or industrial experience. Of these 55 position announcements, 54 listed teaching experience as a desired qualification and 36 listed industrial experience as a desired qualification. In some cases, both industrial and teaching experience were desired.

Degree Required

The majority of position announcements (78.9%) indicated a requirement or a preference for the applicant having completed the doctorate (See Chart 1.2). More specifically, 25 (35.2%) indicated doctorate required and 31 (43.7%) indicated doctorate preferred.

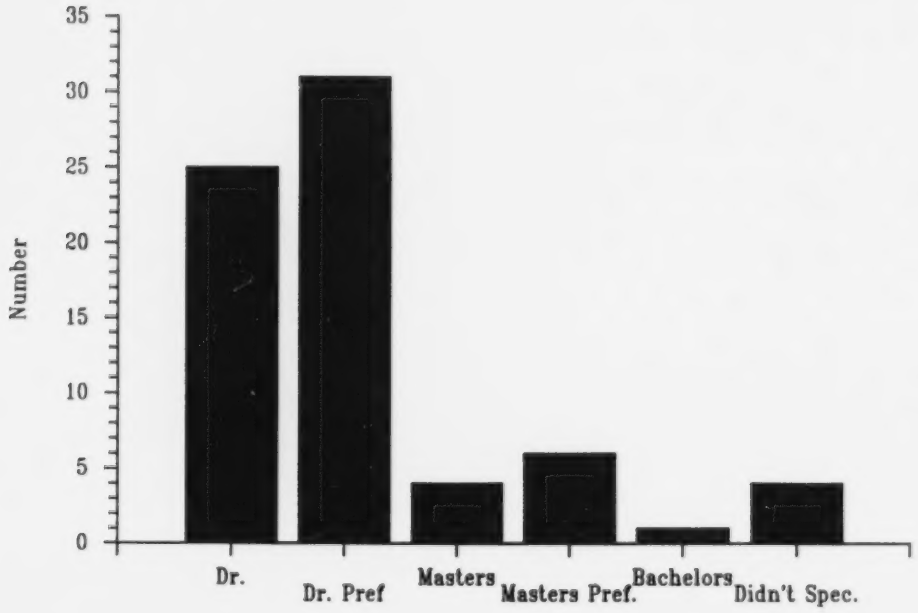

Chart 1.2: Degree Advertised

Technical Specialties

Most of the positions advertised in 1986-87 were for faculty with technical expertise. The technical areas with the greatest demand were:

- Manufacturing (N = 10)
- Electronics (N = 8)
- Graphics (N = 6)
- CAD/CAM (N = 4)

Other technical areas included Power/Energy/Transportation Technology (N = 3), Industrial Technology (N = 2), Human Resource Development (N = 2), Drafting (N = 2), Polymer Technology (N = 2), Communication Technology (N = 2), Construction Management (N = 2), Automotive (N = 3), Computer Applications (N = 1), Metals (N = 2), Engineering Technology (N = 1), and Industrial Management (N = 1).

Although there was great demand for technical faculty, the analysis of positions announcements indicated a demand for teacher education faculty also. There were nine advertisements for industrial education faculty and three advertisements for vocational education faculty. These 12 advertisements accounted for about 17% of the positions.

The other positions that did not fall under the categories of technical positions or teacher education positions included; six searches for department administrators, one search for adult education, one search for a curriculum specialist, and one search for a computer systems operator.

Section 2.0 – Vacancy Status

To determine the status for each search, the department heads at the colleges/universities with vacancies were surveyed by mail questionnaire. One questionnaire was sent to the department heads for *each* position vacancy that was identified. The questionnaire requested answers to the following questions:

- Was the position filled? If not, will a faculty search be conducted in 1987-88 for the position?
- How many applications were received for each position?
- How many applicants met the advertised qualifications?
- How many applicants were interviewed?
- What was the highest degree held by the successful candidate?
- What type of position did the successful candidate have immediately before accepting employment?
- What factors were important in hiring the faculty member?
- How difficult has it been to employ university faculty?

Of the 71 position vacancies identified, 68 (95.8%) responded to the search status survey. The following narrative and selected charts and tables present the findings of the study.

Status of 1986-87 Faculty Searches

Of the 68 responses, it was reported that 45 (66.2%) of the positions were filled (see Chart 2.1). One of the remaining 23 positions had been offered to someone but the status was unknown at the time of the data collection. Twelve of universities/colleges indicated that they would offer the unfilled positions again next year while only one indicated they would not. The remaining ten did not report whether the unfilled position would be offered again next year or not.

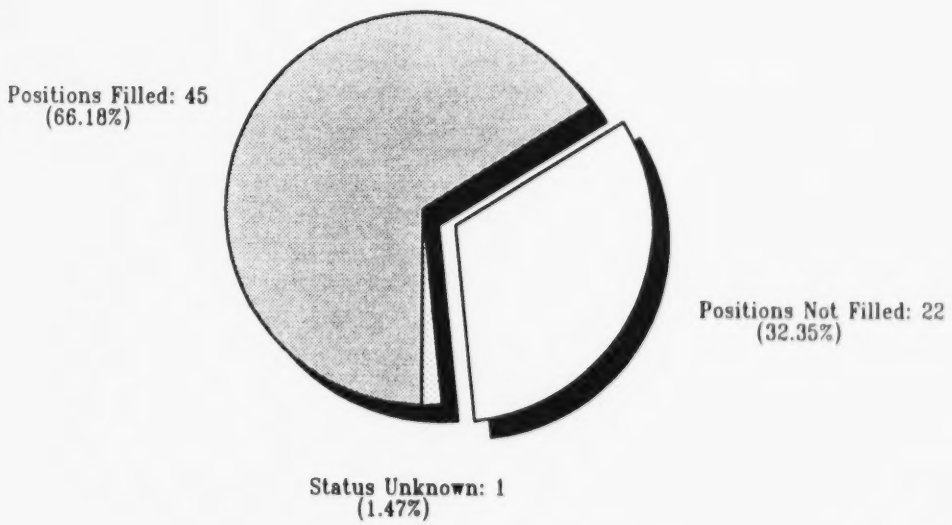

Chart 2.1: Status of 1986-87 Faculty Searches

Number of Applicants

The number of applications received for each position ranged from two to 40 (with one exception which reported 120). The breakdown of applicants per position was as follows: slightly more than one third (36.07%) received less than ten applications, slightly less than one third (31.15%) received ten to 19 applications, and the remaining third (32.79%) received 20 or more applications (see Chart 2.2). The relatively low number of applicants per vacancy suggested that the pool of applicants was not large. It should also be noted that these data do not indicate how many applicants applied for more than one position.

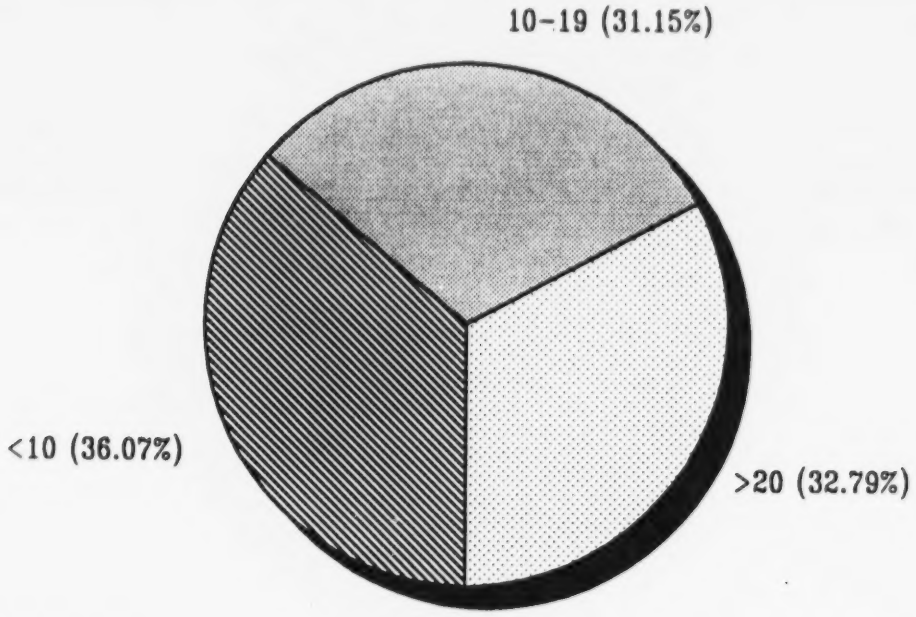

Chart 2.2: Number of Applications Received

Number of Qualified Applicants

When asked how many of the applicants met all the qualifications listed in the announcement, about two fifths of the respondents reported that they received four or less applications per position from candidates that they felt met all the qualifications advertised (see Chart 2.3). Approximately one fifth (21.7%) of the respondents reported that they received less than three applications from fully qualified applicants. The lack of fully qualified applicants presents a serious situation because it means that there is a limited pool of applicants from which to select faculty. Sometimes in situations like this, faculty are employed who do not meet the qualifications.

Number of Applicants Interviewed

Sixty-one of the department chairs provided information about the number of interviews conducted for each search. The majority of the universities (N = 34, 55.7%) interviewed two or three candidates. Eighteen percent (N = 11) of the departments conducted only one interview. Sixteen percent (N = 10) interviewed four or five candidates. Given tight university budgets, interviewing more than three candidates would suggest that the department was having difficulty finding the right person to fill the position or having difficulty finding a person who would accept the position.

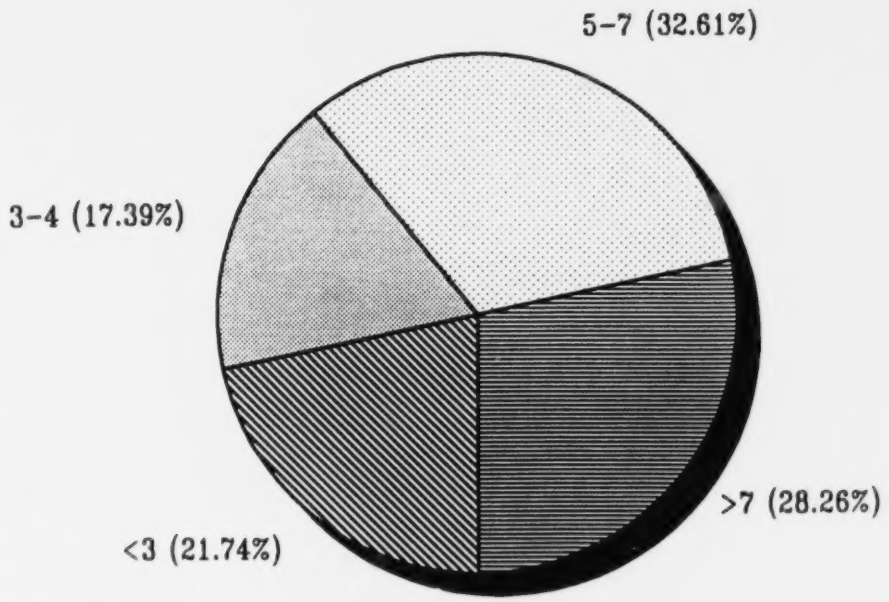

Chart 2.3: Number of Qualified Applicants

Highest Degree of Successful Candidates

The successful candidates had various educational degrees (see Table 2.1). The majority of the successful candidates had attained the doctorate (N = 26, 57.8%) while an additional four candidates (8.9%) had completed "all but dissertation" (ABD) for the doctorate. Twelve positions (26.7%) were filled with candidates who had attained the master's degree and the remaining three positions (6.7%) were filled by candidates who held the bachelors degree.

Table 2.1: Highest Degree of Successful Candidates by Degree Preferred

	Highest Degree of Candidate Employed			
	Ph.D./Ed.D.	A.B.D.	Masters	Bachelors
Degree Advertised				
Doctorate	14	2		
Doc. Preferred	9	2	8	
Masters	1		2	
Masters Preferred	1			3
Not Specified	1		2	
Total	26	4	12	3

Matching the highest degree attained with the preferred and/or minimum required degree produced some interesting findings. Three candidates who held the bachelors degree filled positions where announcements stated a preference for someone with a master's degree. Of the successful candidates with master's degrees, eight vacancy announcements stated a preference for the doctorate. The four positions that were filled with candidates who had completed "all but dissertation" all indicated that they preferred or required someone with a doctorate. The 26 positions that were filled with candidates who had the competed doctorate two were advertised requesting the candidate to have a Masters, 9 preferred the doctorate, 14 required the doctorate, and one position did not specify the minimum degree required.

These findings indicate that 18% of the positions were filled by candidates who did not meet the preferred educational requirements stated in the position announcement. A shortage of fully qualified candidates might be indicated when nearly one fifth of the positions are filled with faculty who hold lower than preferred educational credentials.

Rank of Successful Candidates

The rank most often awarded was the rank of Assistant Professor (23 positions). Eight new faculty were granted rank of Associate Professor and five were granted the rank of Professor. Seven of the successful candidates received the rank of Lecturer and one was hired with no rank.

Table 2.2: Rank of Successful Candidates by Rank Advertised

	Rank of Successful Candidate				
	Professor	Associate	Assistant	Lect./Inst.	Other
Rank Advertised					
Professor	1				
Assoc/Full					
Assoc/Asst.		2	4	1	
Assistant			6		
Asst/Lecturer	1				
Lecturer/Inst.			2	3	
Open Rank	3	4	5	2	
Does not Specify		2	5	1	2
Other			1		
Total	5	8	23	7	2

In some cases the rank granted was not the same as indicated in the position announcement (see Table 2.2). Of the seven new faculty receiving the rank of lecturer, one position was advertised as an associate/assistant professors position. Of the 23 assistant professor positions, ten of the positions

were advertised as associate/assistant or assistant professor positions, two were advertised as lecturer positions, and one was advertised as a professor position. Two of the eight faculty receiving the rank of associate professor were advertised as associate/assistant professor positions, four were open searches and two search did not specify rank. Professor was the rank given to five of the successful candidates. One of the positions was advertised as a full professor, one was advertised as a lecturer/assistant professor position, and three were open searches.

Prior Position of Successful Candidates

The successful candidates held various positions prior to accepting the appointment ranging from high school teaching to private industry. Forty five universities provided data about position held immediately prior to appointment. The results are presented in Chart 2.4. It is interesting to note that mode prior position was employment at another university (N = 17). With several faculty being hired away from other universities, additional position vacancies are created. This factor also suggests that the pool of qualified candidates may be small. It also may suggest that departments may prefer to hire experienced faculty.

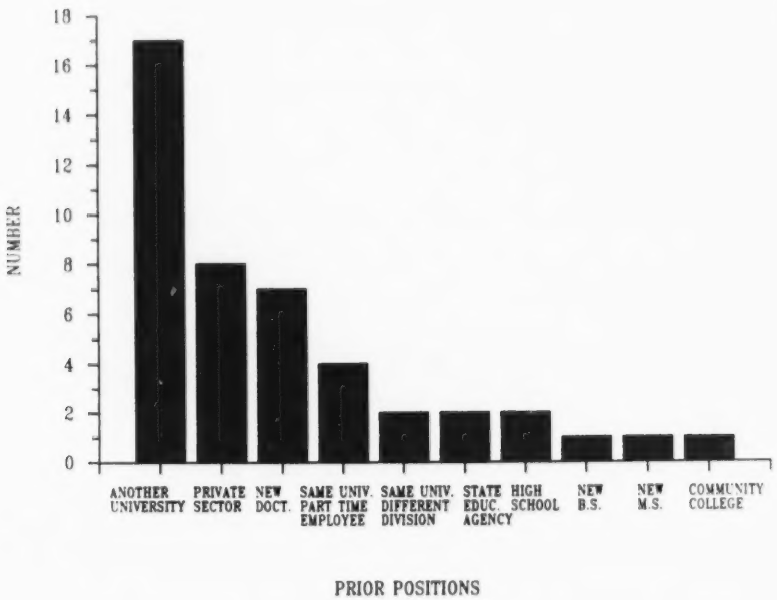

Chart 2.4: Prior Positions Held by Successful Candidates

Factors Important When Hiring Faculty

Each department head was asked to rank the following six factors as to their importance when hiring faculty members: doctorate, technical expertise, teaching experience, industrial experience, scholarly work (publications, presentations, etc.), and recommendations (see Chart 2.5). Technical expertise was ranked first as the most important factor influencing the hiring of faculty. The second most important factor was industrial experience followed by the doctorate degree. Teaching experience, scholarly work and recommendations were ranked fourth, fifth, and sixth respectively. It should be noted that many of those surveyed indicated the importance of all of the factors listed and that just because one may be ranked lower than the others, it did not understate its importance.

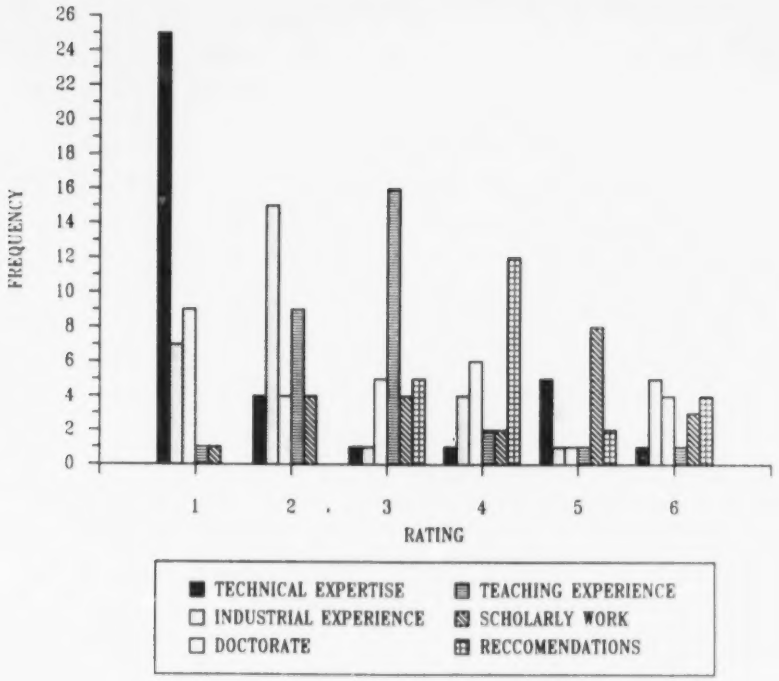

Chart 2.5: Factors Important When Hiring Faculty

Difficulty Filling Positions

Each of the department heads surveyed was asked to indicate how difficult they thought it was to employ university faculty. A scale of one to ten was used where one indicated that it was very difficult to employ university faculty and ten indicated that it was not difficult at all. The distribution of responses was negatively skewed suggesting that universities are experiencing difficulty in employing faculty (see Chart 2.6).

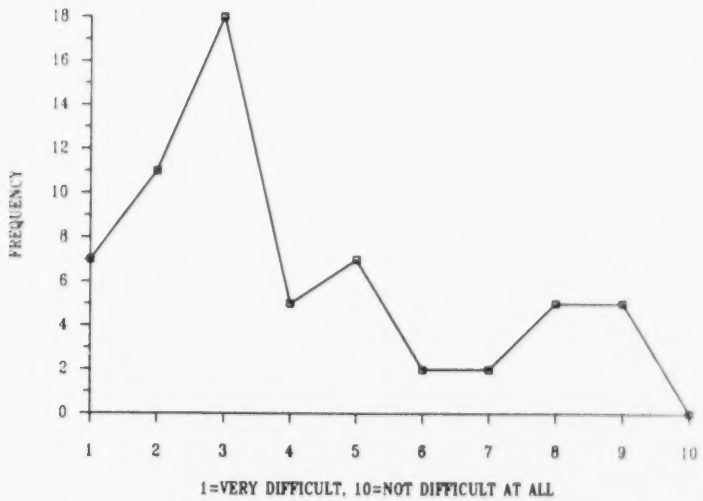

Chart 2.6: Difficulty in Filling University Positions

Conclusion

The findings of this study tend to substantiate the predictions of a shortage of qualified candidates to fill university technology faculty positions. However, the success, or lack of success, in filling faculty positions is a very complex issue. Factors such as salary, geographic location, institutional prestige, teaching loads, facilities and equipment, and types of programs affect the desirability of positions and the success of universities in filling positions.

One of the most important roles of the department head/chair is to employ and retain quality faculty. Of particular concern to heads/chairs is the finding that most newly employed faculty came from other universities. If universities continue to "steal each other's sheep," the results could be a revolving door that damages the continuity of programs. Additional searches caused by hiring faculty from other universities will increase costs for recruitment of faculty that will divert funds from other university programs/needs. In addition, when a position is advertised several years in a row, potential candidates may begin to wonder why, and an unintended stigma may result.

While additional comments could be made about the findings, it must be remembered that this research report only provides a limited, one-year look at the success of faculty searches. Additional data will need to be collected over time to determine the success trends and results of faculty searches.

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